

A Corporate Publication of Santee Cooper

POWERSOURCE

SPRING **2010**



From the CEO

W

e've spent a lot of time the past few months directing customers to our Web site, www.ReduceTheUse.com, which greets visitors with bright boxes carrying the words ReDuce, ReThink and ReNew. These very simple messages highlight our new clarion call: Reduce the Use, South Carolina.

Reduce the Use is Santee Cooper's innovative energy efficiency program launched last September with programs and incentives that will save 209 million kilowatt-hours of electricity by 2020. Additionally, Santee Cooper wants our customers to ReThink their use of energy at home and at work, and to ReNew appliances and other home features to maximize energy efficiency.

Santee Cooper has promoted conservation and energy efficiency for more than 40 years with much success. We remain committed to the concept, and we realize the need for fresh approaches to win over more customers.

One tool is money: Santee Cooper is paying customers to reduce their use of our product. That may seem a strange business approach, but it shouldn't. In the long run, we all save when we cut our electricity consumption. Certainly our customers practicing energy efficiency save, in lower monthly electric bills and in not having to pay for new generation as often. Santee Cooper saves in how soon and how much we build new generation to meet demands from a growing customer base. And the state saves by having a solid economic development tool to use – lower power rates – as they recruit new industries, expand existing

industries and create new jobs in South Carolina.

Through rebates and other incentives, Santee Cooper is already helping customers buy new ENERGY STAR® refrigerators and recycle their old power-hogging models, install energy-efficient compact fluorescent light bulbs in their homes and businesses, make energy-efficient improvements to existing homes, and build new ENERGY STAR certified homes. We are fine-tuning additional incentives right now and will be launching those over the next couple of years.

We're putting our money where our mouth is, rewarding customers who ReDuce their use. Frankly, it's a small investment with big payoffs for our customers and our state. Thank you for your help.




Lonnie N. Carter
President and Chief Executive Officer



Mixed Sources
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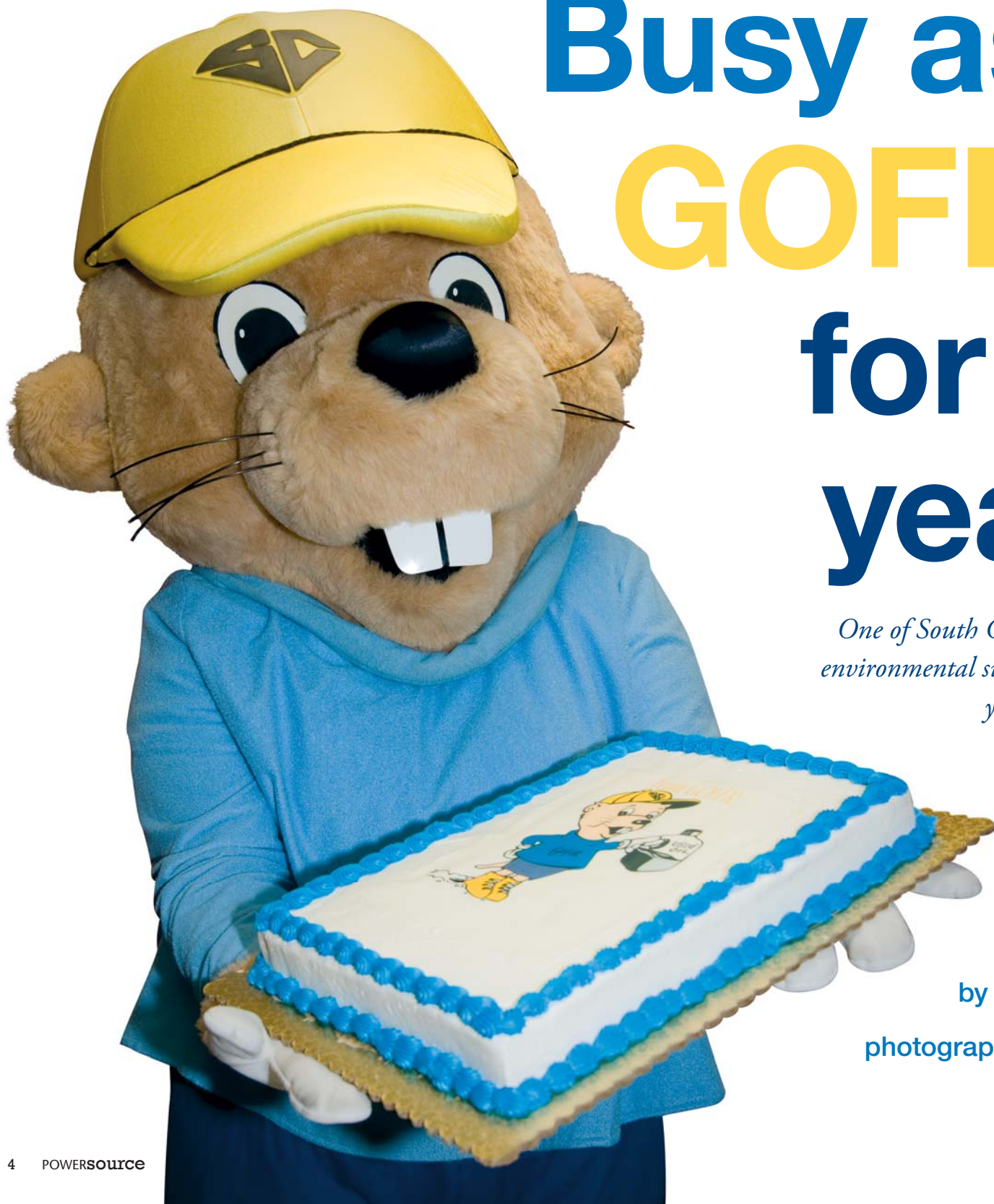
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Busy as a GOFER for 20 years

*One of South Carolina's greatest
environmental success stories is 20
years old this year.*

by Willard Strong

photography by Jim Huff

Santee Cooper's Give Oil for Energy Recovery program, commonly known as GOFER, began as a solution for the do-it-yourself oil changers and the messy, often inconvenient problem of properly disposing of used motor oil.

On Earth Day in April 1990, Santee Cooper implemented a pilot project to gauge the public's response to used oil collection. The utility offered two days of public collection at Santee Cooper warehouses in Moncks Corner and Myrtle Beach. With modest promotion, approximately 700 gallons were collected, a strong indication there was demand for the service.

With the pilot declared a success, GOFER launched on July 30, 1990, as the first gallon of used motor oil was ceremoniously poured into a 275-gallon tank located beside Santee Cooper's Moncks Corner headquarters. Later that same day, a second GOFER site opened at Winyah Generating Station in Georgetown County. Less than a year later, in June 1991, Santee Cooper formally announced that the program would go statewide. GOFER hasn't looked back since.

Today, there are approximately 600 do-it-yourselfer GOFER collection sites throughout South Carolina, serviced by a fleet of four Santee Cooper trucks, including three large-capacity tankers. Four drivers run pickup routes servicing locations in 41 of the state's 46 counties. Santee Cooper safely converts the oil into electricity at one of its generating stations and has collected over 25 million gallons in two decades.

"Santee Cooper provided a solution for proper used oil disposal in South Carolina," says Jay Hudson, Santee Cooper's manager of environmental management, who served as the GOFER program's first supervisor. "The biggest benefit has been to the public, providing a safe and convenient way to dispose of used oil. That simply didn't exist before. We worked with the state's Department of Health and Environmental Control, county recycling centers and electric cooperatives to place tanks. Santee Cooper also benefits because we



John Rainey, former chairman of the Santee Cooper Board of Directors, pours the first gallon of oil into the first permanent GOFER tank on July 30, 1990, signaling the beginning of what has become South Carolina's largest used motor oil collection program.



recover fuel we need. It's been a big success for South Carolina."

The state Legislature outlawed the dumping of used motor oil in 1992, noting how bad it was for the environment. How bad? One gallon can foul 1 million gallons of freshwater. Before GOFER came along, DHEC estimated that up to 1 million gallons of used oil were improperly dumped statewide.

"This is such a positive environmental story for South Carolina because before GOFER, the public had few, if any, real options to properly dispose of used oil," says Lonnie Carter, Santee Cooper president and CEO. "Now, there is no excuse to dump used oil on the ground or in a body of water. It's also illegal."

In 1991, its first full year of operation, GOFER collected 46,268 gallons of used oil from 49 sites. The following year saw collections triple to more than



Above: Santee Cooper, as part of its normal operations, collects GOFER oil at its generating stations, such as this tanker making a pickup at the Cross Generating Station in Pineville, S.C.

Santee Cooper Principal Engineer Dave Mundy teaches his daughters (from left, Kaitlin and Sarah), that properly disposing of used oil helps protect the environment.

175,000 gallons from 72 sites. In 1993, 244 sites yielded more than 500,000 gallons.

“By 1994, there was at least one GOFER tank in every county in South Carolina,” says Susan Jackson, Santee Cooper’s supervisor of environmental services. “On Dec. 13 of that year, the one-millionth gallon of oil was pumped from a GOFER tank at the Enoree Landfill located in Greenville County and also that year, we had grown to 203 GOFER sites.”

Santee Cooper remains today the largest collector of used motor oil in South Carolina. This exponential growth did not go unnoticed by the environmental community at the state and even the national levels. By the mid-1990s, the GOFER program had garnered nine environmental awards with three coming in 1994 alone, including a prestigious honor from Keep America Beautiful.

“It’s nice to win awards, but the nicest thing is that the program has shown how we’ve worked with state government and county



Above: This tanker is unloading GOFER oil at the Jefferies Generating Station near Moncks Corner.

This 3,500-gallon tanker plies the highways and byways to collect GOFER oil throughout South Carolina.

governments to meet a need,” says Dave Evans, Santee Cooper’s manager of property management, who formerly headed environmental services. “Most GOFER tanks are located at county recycling centers, which were just getting started when GOFER came along. We’ve developed along with them.”

At GOFER’s 10th anniversary in 2000, a decade of collections translated into 8 million gallons, producing enough electricity to power 500,000 average-sized homes for one month.

In addition to targeting do-it-yourselfers, Santee Cooper soon began receiving oil from commercial and industrial sources. This greatly boosted collection totals. In 2001, 2 million gallons of used oil were collected. By 2005, GOFER’s 15th anniversary, approximately 17.5 million gallons had been collected and safely converted into electric power, enough electricity to power over 1.5 million average-sized homes for one month.

The program has embraced technology to make oil pickups more efficient, working with Santee Cooper’s information technology (IT) department.

“IT built a computer program with all our records, such as customer information,” Jackson says. “This saves a lot of time when entering transactions.”



Since GOFER was “born,” he has become a friendly face of the program to children of all ages.

In 2009, 1.3 million gallons of GOFER oil were collected, with 725,629 gallons of that total from industrial and commercial accounts.

In addition to the environmental benefits, GOFER has a financial success story as well, in that it offsets the amount of money Santee Cooper needs to spend on oil for normal utility operations. In 2009, that cost savings totaled approximately \$1.25 million.



GOFER made a personal appearance last February at Devon Forest Elementary School. Served by Berkeley Electric Cooperative, the Goose Creek school has Santee Cooper as its source of power, including electricity generated by Santee Cooper from GOFER oil.

For more information, or to locate the nearest GOFER collection site to you, visit www.scgofer.com.

The GOFER character, an original Santee Cooper creation worthy of Walt Disney or Hanna-Barbera, has also evolved through the years. The first GOFER sported a tail, longer whiskers and more prominent buck teeth. He slightly morphed, as has Bugs Bunny through the years, to become a little friendlier looking.

GOFER and his helpers make frequent visits to South Carolina schools, among other public appearances, handing out coloring books, pencils and other assorted items that promote proper used oil disposal.

“We continue to make progress in the GOFER program and a fun part of it is sharing the ethic of environmental responsibility with youngsters at schools,” says Jackson. “The GOFER character has tremendous appeal to children. He is a great ambassador for the program.”

Jackson and her GOFER team take tremendous pride in instilling a positive environmental ethic in the state’s young people, who are keenly interested in doing the right thing to protect South Carolina’s natural resources.

Just how powerful is GOFER? Those 25 million gallons collected over 20 years generated 2.05 million megawatt-hours of electricity, enough to run every home in South Carolina for six days using energy that otherwise would have been thrown away. **PS**

Happy birthday, GOFER!



The first mile on a gridlock- free power highway

In a January 2009 report, the Electricity Advisory Committee concluded that the nation's electric power delivery system is unfit and must be enhanced to meet increased electric service needs over the next two decades.

More specifically, the report said the transmission infrastructure is aging and congested, and further development of infrastructure is impeded by "an archaic patchwork of cost allocation policies, fragmented permitting and siting practices, and varying needs analyses that are limited in focus and scope."

by Kevin F. Langston

photography by Jim Huff

First in a series about Santee Cooper's transmission system, which achieved a record 99.99 percent reliability rate in 2009.



When you're trying to move people from the city out into the residential areas, you've got to have . . . interstates and primary roads and secondary roads. Well, transmission is the interstate and primary roads.” —Terry Blackwell, Senior Vice President

Terry Blackwell notes how different that national snapshot is from the picture of Santee Cooper's transmission system.

“Our system is excellent,” Blackwell says. “The only thing you have to do is look at the results. In 2009, we had the most reliable year we've ever had: 99.99 percent. That means, on average, your lights were out for only five minutes all of last year.”

Blackwell is Santee Cooper's senior vice president of power delivery and oversees the planning, design,

construction, operation and maintenance of its transmission system, the lines and substations that move extremely high voltages of energy generated by power plants across great distances.

“In a perfect world, your generation would be distributed equally throughout your service area. The bulk of our generation fleet is in the eastern part of South Carolina. So our challenge is to move that power throughout all areas of the state, and we do that with transmission lines,” Blackwell says. “It's kind of like

a highway system. When you're trying to move people from the city out into the residential areas, you've got to have that network of roads: the interstates and primary roads and secondary roads. Well, transmission is the interstate and primary roads.”

As the electricity reaches residential areas, it enters a separate distribution system, through substations that step it down to lower voltages for household use.

Principal Engineer Gary Daniels and Engineering Associate Susan Phillips are with design engineering's substation relay & control design group. It is their job to design the systems to protect the equipment within a substation.

In the U.S., there are approximately 160,000 miles of high voltage transmission lines and 10,000 transmission substations. Santee Cooper maintains 5,569 miles of transmission lines, through all 46 counties of South Carolina, and 102 transmission substations; achieving a reliability of 99.99 percent across this system is an accomplishment that involves all areas of Santee Cooper's transmission team.

But it all starts with planning and design.

Mike Budreau, manager of design engineering



“The biggest challenge we have is anticipating load growth. Where is it that we need to move this power, and how much can be moved through our existing system? How much are we going to have to add to our existing system to make that delivery reliable and economical?” Blackwell says. “This is where planning comes into play.”

Tom Abrams, Santee Cooper’s vice president of planning and power supply, directs that all-important first step.

“Planning is key to reliability. To be good at what we do

operationally, we have to be good at planning,” Abrams says. “Planning is a very complex activity, because you’re looking so far ahead and developing projections of the transmission system. You’re dealing with very high levels of uncertainty, and the amount of uncertainty increases the further out you look. It takes a long time to construct some of these projects, so it’s a real challenge to identify and have those projects in place by the time they’re needed.”

Abrams says there are a lot of computer programs and technical data that go into these planning

processes, but it’s the people involved that help Santee Cooper excel.

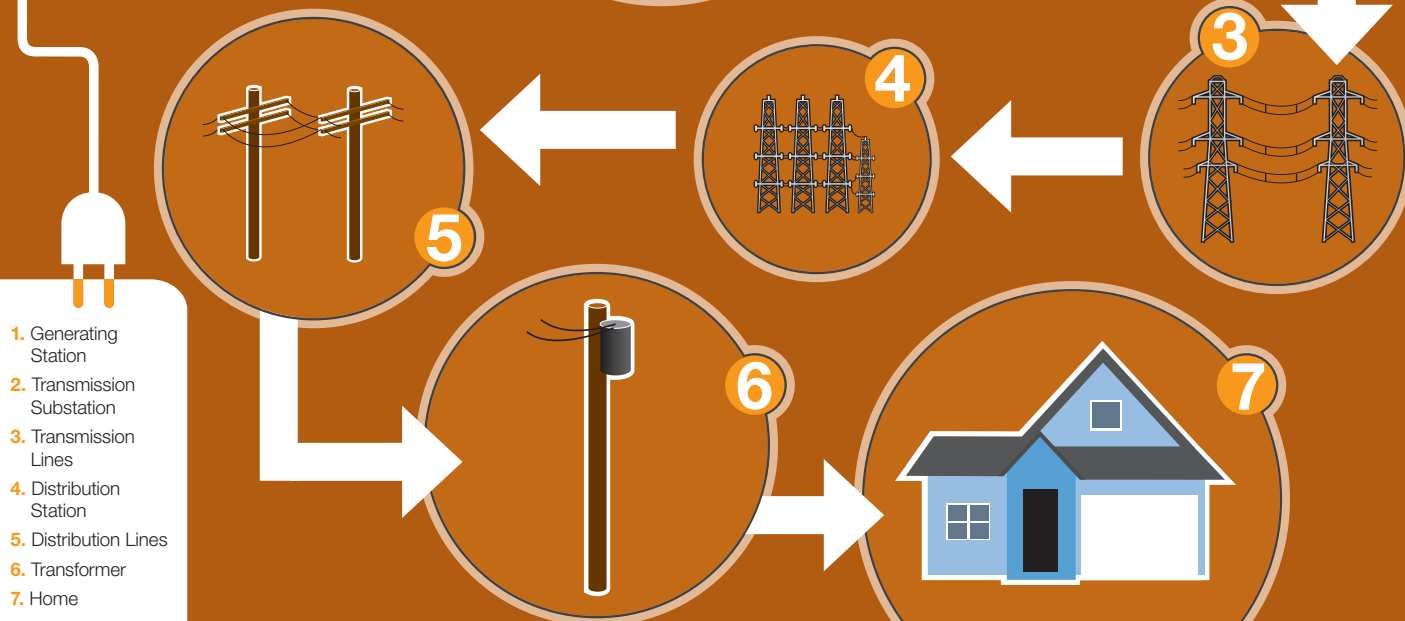
“A computer can’t identify what options to consider. You need a good planning staff that’s really good at generating ideas and testing those ideas and implementing those that have the most benefit. And by ‘the most benefit,’ I mean low-cost, reliable and economical for the near and long term,” Abrams says. “I’m really proud of the planning staff we have.”

Because Santee Cooper’s system is interconnected with those of



Power Delivery

How Santee Cooper Gets Power to Your House



1. Electricity is generated at power plants through a process where a turbine converts the kinetic energy of a moving fluid (liquid or gas) into mechanical energy.

2. A step-up transmission substation receives the electric power from the generating station and uses a large power transformer to increase the voltage for long distances. There are also step-down transmission substations, which are commonly located at switching points in an electrical grid. They connect different parts of the grid and are used to reduce voltage.

3. Transmission lines carry electric energy from one point to another in an electric power system. The main characteristics that distinguish transmission lines from distribution lines are that they are operated at relatively high voltages, they transmit large quantities of power and they transmit the power over large distances.

4. Distribution substations reduce the voltage to levels that are safe for use by customers.

5. Distribution lines then carry the lower voltages into residential areas.

6. Transformers reduce the electricity's voltage even further before it enters the home.

7. Many of today's conveniences, from computers and game consoles to appliances and televisions, would not be possible without electricity.

Source: U.S. Department of Energy, Office of Electricity Delivery and Energy Reliability



General Engineer Robbie Fleming and Technical Associate Randy Jackson, with transmission design, review drawings for a transmission line project.

neighboring utilities, Abrams says it's vital for all the utilities to collaborate to ensure the flow of electricity as the grid crosses service territories.

Santee Cooper's transmission system is part of a much larger transmission network known as the Eastern Interconnection that covers most of eastern North America, from the foot of the Rocky Mountains to the Atlantic Seaboard, excluding most of Texas. Santee Cooper belongs to the Eastern Interconnection Planning Collaborative, and it also collaborates with the SERC Reliability Corp., one of eight regional electricity reliability councils overseeing broader power generation and delivery issues. SERC members include South

Carolina Electric & Gas Co., Southern Company, Duke Energy, Progress Energy, Florida Power & Light and the Tennessee Valley Authority.

"We work very closely with everyone we serve on the system," Abrams says. "It's a continual process of developing models of the system, coordinating with everyone around you, meeting with your customers and getting their input, and feeding all of these things into the process. Good planning requires a high level of local knowledge: people who are very familiar with the local needs and characteristics of the system, and which options are even viable. You have to be close to the system to be able to generate good ideas, and the coordinated

processes we've used here in the Southeast have worked very well."

Abrams says the excellence of Santee Cooper's transmission system is indicated not only by its reliability index, but also in its ability to meet the demand on the system at any load level. "We have to have the ability to withstand outages on the system without causing further problems," Abrams says. "This system is planned well, designed well and operated well."

As manager of design engineering, Mike Budreau and his team handle the design of the transmission lines and substations, the communication systems that support these assets and the distribution substations that serve Santee Cooper's retail distribution customers.

"We're responsible for all of the engineering and pre-construction work," Budreau says. These





The Carnes Crossroads 230-115 kV substation near Goose Creek was originally built to serve industrial customer Alamax of S.C. (now Alcoa-Mt. Holly). It is served by both Jefferies and Cross generating stations.

responsibilities include surveying and permitting new transmission lines and substations; plotting alternative routes for transmission lines; laying out substation configurations; designing the approved project in accordance with the scope established by Santee Cooper's planning department; acquiring the necessary construction materials; and creating the construction specifications for the crews who will eventually build the project.

Budreau credits Santee Cooper's planning and project management teams with handing his group a clear starting position

for developing and building successful systems.

"From my perspective, it's my job to make sure we have the right tools and the right attitude," Budreau says. "Advancements in technology give us an opportunity to design a better product, so we're constantly reviewing new solutions to determine the best course of action."

At any given time, design engineering could be working on 50 to 60 projects, "and they each have different lead times and levels of complexity. It may take a year, it may take

two or more years, to do some of the design work involved. Once it's constructed and turned over to operations, we want them to have a safe, well-designed and reliable system."

A reliability index of 99.99 percent is the byproduct of a transmission group that is committed to quality customer service.

"It's easy to be enthusiastic about our mission," Budreau says. "We're here to help people, and we want to do that the best that we can, with efficiency and at the lowest possible cost." **PS**

by Mollie Gore

photography by Jim Huff

Hobcaw Barony

where history and science happily cohabitate

Franklin Delano Roosevelt slept here. So did Winston Churchill, George C. Marshall and other political luminaries who ruled the world during the 1930s and 1940s. It's hard to imagine today the scope of conversations held decades ago at Hobcaw Barony, Georgetown County winter home to New York millionaire and presidential adviser Bernard Baruch. What is certain is that they were important.

President Roosevelt authorized America's invasion of Italy from these Georgetown County shores. Baruch himself penned a plan to rebuild Europe after World War II, pieces of which Secretary of State Marshall used in crafting the Marshall Plan.

After his wife died, Baruch turned to daughter Belle to serve as hostess. Belle left behind a life in Europe, somewhat reluctantly, to join her father at Hobcaw, and yet she died 30 years later so enamored of the property that she created a foundation to shape its future. For

more than 40 years, the Belle W. Baruch Foundation has worked to preserve Hobcaw specifically for research use by the state's universities, in particular research into forestry and marine biology.

And so today, while Baruch Foundation Executive Director George Chastain looks for grants and other opportunities to preserve the property's historical significance, he welcomes university scientists seeking to make some history of their own.





Bernard Baruch's life and times at Hobcaw

Bernard Baruch was born in Camden, S.C., and moved to New York at age 10. After college, he worked as a runner for a Wall Street brokerage and then advanced quickly to broker – and a successful one, earning millionaire status by age 30.

Baruch shared his wealth with charitable causes and as a campaign financier for Democratic candidates. President Woodrow Wilson named him chairman of the War Industries Board in 1917, and at the war's end Baruch accompanied Wilson to the Versailles peace conference. Baruch advised presidents Hoover, Roosevelt and Truman on

matters of national economic interest, and he is credited with coining the phrase “the Cold War” during a speech in Columbia, S.C.

Baruch also had been acquiring property in Georgetown County,

Hobcaw House was Bernard Baruch's winter home and is open for tours.



purchasing 17,500 acres that once held 11 rice plantations and naming the property Hobcaw Barony, after the original land grant that he nearly reassembled in its entirety. Hobcaw (meaning “between the waters”) sits between Winyah Bay, the Waccamaw River and the Atlantic Ocean.

Visitors today can tour Hobcaw House, which Baruch built in 1930, after his first home on the property burned. The home is “fireproof,” made of brick with a steel frame and plaster walls, and it is a restoration work in progress: Using grant money and other revenue beyond its trust for science research, Baruch Foundation is scraping paint and restoring details to restore Hobcaw to its 1930s glory, using furniture original to either Hobcaw or to Belle’s home nearby. “Ninety-five percent of the furniture in here is original to the two houses,” Chastain said.

Roosevelt stayed in a guest room on the main floor. “He was suffering from congestive heart failure,” Chastain noted. “His doctor said, ‘Get out of D.C.’ and so he came here for about a month in 1944.”



It was supposed to be a secret visit, but even in the 1940s a president traveled with a lot of attendants. “The Marines from Camp Lejeune were at the gate, the Coast Guard was patrolling the bay, and the Secret Service took over a hotel in Georgetown,” Chastain said.

Bernard Baruch spent winters at Hobcaw House until 1955, when Belle became sole owner of the property. He died in 1965 at age 94. Bernard outlived Belle, however, and although her will established the Bernard Baruch Foundation to preserve Hobcaw Barony, he changed the name after her death to the Belle W. Baruch Foundation.

Belle Baruch: equestrienne, pilot, philanthropist

Bernard Baruch gave his children their inheritances for their 21st birthdays, and Belle promptly moved to France. An outdoors enthusiast, she began riding competitively and racking up trophies. She owned several horses but her favorite was Souriant, on whose back she became the first woman and first American to win France’s President’s Cup.

As war loomed in Europe, Baruch lured Belle back home. At her request, he sold her a third of Hobcaw Barony in 1935 and she began building Bellefield, a white framed house named after one of the original rice plantations.

“She built her house while she was in France, from



Opposite page, clockwise from top: A newspaper reporting the death of President Franklin Delano Roosevelt sits on a stand in the room where he stayed as a guest at Hobcaw House. Bernard Baruch and daughter Belle in a photo taken about a year before her death. Baruch Foundation’s board of directors meets regularly in the dining room at Hobcaw House.

This page, from top: The Hobcaw stables are visible through the trees in this photo taken from the front of Bellefield. A church and cabins offer insight into how residents lived in Friendfield Village, a former slave village on the grounds at Hobcaw Barony. This medallion is one of hundreds Belle Baruch won during her years riding competitively in Europe.



From top: An oil portrait of Belle Baruch's favorite horse, Souriant, hangs on one wall in the Hobcaw gun room. According to Chastain, a group of Italian government officials tried to buy Souriant from Belle after she competed in Italy, as a gift for Mussolini. Belle reportedly told the government officials, "There's not enough money in the Italian treasury for that." Visible through a sunroom window is the pewter bar Belle Baruch brought back from Europe and used to serve drinks to visiting politicians and artists in the 1930s.

letters and telegrams," Chastain said, "but she waited until she was in residence to build the stables. She had to be here to personally supervise construction."

Once the stables were complete, Belle moved her trainer, his family, and her horses to Hobcaw. She decorated the stables with some of the many medals she won in Europe. A trophy case at Hobcaw House holds sailing trophies and additional riding awards, including the President's Cup trophy, which Belle later described as "a mid-Victorian eyesore," according to Senior Interpreter Richard Camlin.

Bellefield came into control of the Baruch Foundation in 2001, after the death of Belle's friend and life trustee Ella Severen. It will be renovated as funding becomes available, Chastain said. The home is not open for tours, but the grounds and stables are, and the abundant live oaks, camellias and footprint all speak to the home's former grandeur.

"There are stories of Belle packaging up the camellia blooms in Spanish moss and flying to competitions to show them," Chastain said. Arthritis, compounded by several falls from horses, prompted Belle to give up competitive riding and earn a pilot's license, and she kept her single-engine plane handy for such excursions.

Belle eventually purchased all of Hobcaw Barony from her father, although he continued to use his home. Like Bernard, Belle spent winters at Hobcaw, returning to New York for the balance of the year. And although her home is currently closed to the public, her presence and influence are very much in residence at Hobcaw House.

Hobcaw Barony today

Hobcaw Barony is actually home to 35 structures on the National Register for Historic Places, including Hobcaw House, Bellefield and the stables. There are cabins, a church and other buildings on four former slave villages. Friendfield Village is the largest, with three cabins remaining from the site's original 14 and two cabins added in the early 20th century, along with a church and a doctor's office.

Beyond the historic buildings, Hobcaw Barony has 8,000 acres of forestland, 2,000 acres of brackish marsh and 7,400 acres of salt marsh and marsh islands — all fertile fields for the research underwritten by Belle through her foundation. Clemson University and the University of South Carolina have long-term research arrangements at Hobcaw Barony, and Coastal Carolina University, Francis Marion University, the College of Charleston, and Winthrop University have projects underway currently, as do some out-of-state entities.

Santee Cooper has a research project there as well, a coastal anemometer tower measuring wind speeds, frequency and direction, part of a larger Palmetto Wind Research Project looking at that potential source of renewable energy.

The University of South Carolina established a Belle W. Baruch Institute for Marine and Coastal Sciences, based at the Columbia campus and with its Baruch Marine Field Laboratory at Hobcaw. According to its Web site, the field laboratory provides facilities for research and education on estuarine, freshwater and near-shore ocean systems.

The USC institute partners with the National Oceanic and Atmospheric Administration on research and educational initiatives at Hobcaw's North Inlet-Winyah Bay National Estuarine Research Reserve. Research focuses include the impact of changing sea levels on salt marshes and ongoing monitoring of dissolved oxygen, nutrient levels and more. Some water monitoring stations have collected more than 30 years of data, Chastain noted, creating a database among the most extensive on the East Coast.

The Field Lab includes 18 research laboratories, a seminar room and a smart classroom, among other facilities. There are 35 faculty involved, and USC also obtained a NOAA grant to expand the Hobcaw Barony Discovery Center, adding exhibit and meeting space and creating opportunities for the USC faculty to partner more with the Baruch Foundation staff on educational programs and initiatives for the public.

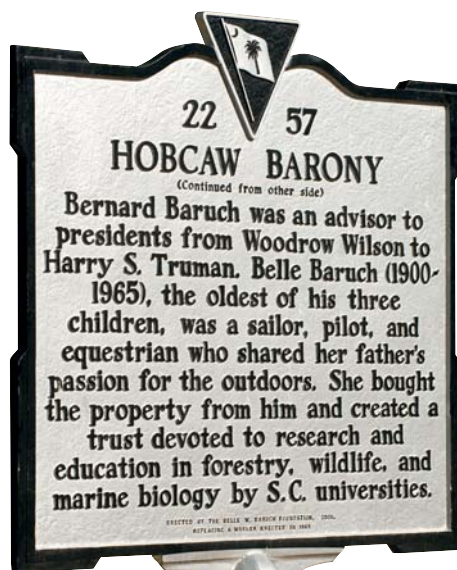
Clemson operates its Baruch Institute of Coastal Ecology and Forest Science at Hobcaw, with six faculty members on site and

These photos represent two research projects ongoing at Hobcaw Barony. In the top photo, anemometers measure wind speed and frequency for Santee Cooper's exploration of wind as a source of renewable energy. At bottom, white stripes designate a tree used for nesting by the endangered red cockaded woodpecker.





Baruch Foundation is nominating Hobcaw Barony as a National Historic Property. "We have to show that it had an impact on the national scene," Chastain said. Such a designation would incorporate everything from the buildings to the camellias that Belle raised and showed.



room to expand in a new classroom and meeting space the university opened last year. Prior to that, Clemson operated out of the second floor of the Hobcaw House and a small building on that house site.

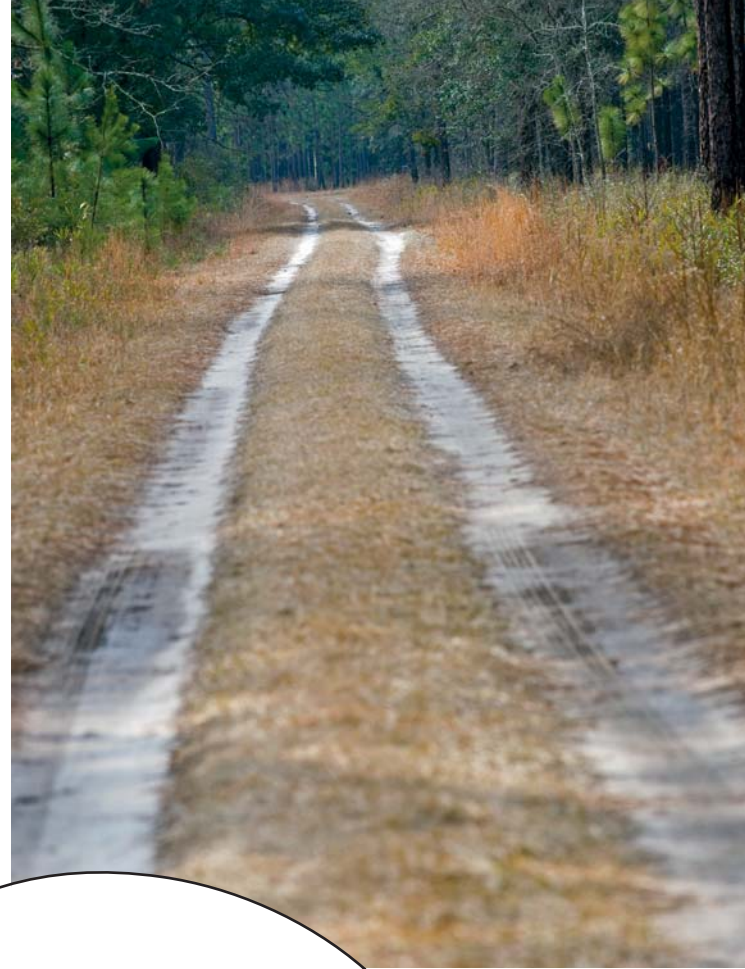
Clemson research initiatives include studying best practices for controlled burns used in forest management; tracking forest responses to hurricanes, wind damage and storm surge; managing forested wetlands and impacts by man's and nature's disturbances; and assessing the impact of changing sea levels, said Dr. William H. Connor, assistant director of Clemson's Baruch Institute. Researchers are also investigating ways to increase the population of red cockaded woodpeckers, an endangered species that nests in stands of mature longleaf pine trees. Researchers have encircled longleaf pines scattered throughout the many stands at Hobcaw with white bands, marking trees that woodpeckers have claimed for nests. Careful cultivation of the stands has helped stabilize the woodpecker population after Hurricane Hugo nearly decimated it 20 years ago.

Connor noted the advantages that Belle Baruch gave Clemson and other universities through her vision to preserve Hobcaw Barony as a “huge outdoor laboratory.”

“She gave us the opportunity to have a large area that can be used for research, that can’t be impacted by others,” Connor said. “We can choose a watershed, we can choose a wetland, we can choose a forest stand. We can equip it with instrumentation and we don’t have to worry about anyone bothering it. It won’t be impacted by logging and it won’t be impacted by clear-cutting (or development). If there’s some sort of manipulation that we want to look at, we can.”

And so just as the Baruchs enjoyed the natural beauty of Hobcaw Barony and shared it with so many prominent figures in their day, the Baruch Foundation carries out Belle’s directive today through opportunities for ecological research, and it offers insight into the enigmatic owners and their immeasurable legacy. **PS**

From top: Traces remain of the original Kings Highway, used by President George Washington on his goodwill tour of the Southern states. Santee Cooper’s research anemometer station is visible through the marsh at Hobcaw.





The Santee Cooper Distribution Control Center is part of the Storm Center facility that became operational on June 20, 2009. The DCC greatly enhances Santee Cooper's ability to manage power restoration in the aftermath of thunderstorms, tropical storms, hurricanes or other severe weather events. At work in the 19,644-square foot facility is (from left) Distribution Controller Thomas Duke, SCADA Network Analyst Scotty Edge and Christopher Howell, distribution controller.

Santee Cooper Storm Center

An Investment in Preparation

by Willard Strong

photography by Jim Huff

Come June 1, personnel at Santee Cooper begin paying closer attention to thunderstorms forming off the western coast of Africa, suspicious low pressure systems in the Caribbean and unsettled meteorology in the North Atlantic.

The sixth month of every year marks the start of another hurricane season, and each lasts through Nov. 30. When the season begins, so do the pundit prognostications. The perennial questions are: “Do you think we’ll have a bad season? How many named storms? Where will they strike? Could we get a Category 5 storm, one with winds greater than 155 mph?”

The answer to these and many other hurricane-related questions is, “No one really knows.” Hurricane season predictions are educated guesses. One thing is certain: Santee Cooper and other electric utilities must be prepared to plan and effectively react to hurricanes, tropical storms, severe thunderstorms and other violent weather events, or customers could be without power for a long time. It

*“Well, the wind is blowin’
harder now
Fifty knots or thereabouts
There’s white caps on the ocean
And I’m watchin’ for waterspouts*

*“It’s time to close the shutters
It’s time to come inside”*

“Trying to Reason With Hurricane Season”
– Jimmy Buffett

almost goes without saying that modern life comes to a screeching halt in the aftermath of large-scale outages.

Hurricanes and other major storms have posed significant threats to power systems since Thomas Edison’s time. The good news is that as time and technology have evolved, utilities are better equipped to restore power than when generating, transmitting and distributing electricity was in its infancy.

With a new facility featuring advanced technology and operating efficiencies, Santee Cooper recently improved its ability to restore electricity after major storms for the 2 million South Carolinians who ultimately depend on Santee Cooper as their power source.



Systems Analyst III Jerry McGill and Mark Sanders, network analyst III, are part of an information technology team that keeps Santee Cooper’s Distribution Control Center running smoothly.



Customer Services Representative Vicky Hunt works in the Santee Cooper Call Center, part of the Storm Center facility.

The 30 or so personnel who staff the Santee Cooper Distribution Storm Center moved in to their new home last June, a 19,644-square-foot building.

The centerpiece of the facility is the Distribution Control Center, or DCC, whose focal point is an impressive map board and within it, a large video screen that can monitor outages, traffic conditions, weather radar and weather forecasting. The DCC is a 24 hours a day, seven days a week operation,

so it's not just for storm restoration. In addition to the DCC, the building includes:

- The Santee Cooper Call Center with room for up to 28 seats when conditions warrant that staffing level. During normal operations, the Call Center is staffed from 8 a.m. to 5 p.m. on weekdays. Its function is customer service on the residential and commercial side of Santee Cooper's retail electric service.
- SCADA, which stands for Supervisory Control and Data Acquisition. SCADA technology is typically found at larger electric utilities such as Santee Cooper, and includes centralized systems that monitor and control the complexities of transmitting and distributing power.
- System communication facilities
- Information technology and computer equipment, including telephones
- Four storm center rooms, where restoration personnel can meet
- A kitchen, canteen, showers and storage facilities

Five fully functional operator consoles are located in the DCC. The mapboard is 53 feet by 14 feet. Video wall technology is part of the installation and can display critical information from electronic maps, data from

the Santee Cooper Distribution Outage Management System and SCADA system, weather, and any software application on Santee Cooper's corporate network.

Additional TVs are strategically located throughout the DCC to allow Santee Cooper's storm team to follow weather reports and updates as their working groups meet and plan responses during a storm.

"The DCC offers direct access to the Storm Center rooms and the SCADA server room," says Bryan Lewis, Santee Cooper's supervisor of distribution SCADA and control. "This combination of technology will speed the restoration process by allowing the distribution controllers to dispatch crews and make logistical decisions quickly and efficiently."

Neil James, Santee Cooper's manager of distribution operations, says the new storm facility also helps employees focus on planning and power restoration and not on the swirling chaos outside the walls. "Employees here know they're in a safe place," James says. "This is a secure location."

The Santee Cooper Storm Center is built to withstand just about any kind of hurricane Mother Nature might dish out. Some of the walls in the building are 18 inches thick. Missile-impact glass, capable of deflecting flying objects and debris, has been installed in window panes. Windows get additional protection from hurricane shutters.

“The concrete roof is lower than the outer walls by design, to tolerate or prevent the walls from lifting due to wind lift,” Lewis says. “The overall building, which took about 11 months to construct, is rated for wind speeds up to 180 miles per hour.”

Santee Cooper has learned real-life lessons from major hurricanes and tropical storms, including Hurricane Hazel in October 1954, Hurricane Hugo in 1989, Hurricane Floyd in 1999 and Hurricane Gaston in 2004. But it was 2005’s Hurricane Katrina on the Gulf Coast that dramatically placed an updated storm center on Santee Cooper’s must-do list.

“I would say Floyd put it on the drawing board,” says Diane Bell, manager of distribution planning and technical operations. “But it was Katrina that got it built. This is a wonderful facility and we all enjoy working here because it enables all of us to more effectively come together and get the job done for our customers.”

As the crow flies, the Storm Center is located 8.5 miles from the ocean, the heart of Santee Cooper’s primary direct-service territory which includes Horry, Georgetown and Berkeley counties. The building is set up to be self-sufficient in the worst weather conditions.

“We’re equipped with a backup electric generator and we have 1,500 gallons of on-site fuel, enough to last about 100

hours,” says Lewis. “We also have backup systems for the heating and air-conditioning systems.”

The commercial-type kitchen gives employees and contract food providers the ability to remain onsite and prepare food for a 24/7 operation. Contingency plans have been made in the event food cannot be prepared and delivered in a hurricane’s aftermath. Santee Cooper learned a lesson from the military in that “meals ready to eat” (MREs) are in storage, along with bottled water, to feed several employees for up to three days.

A large conference room enables swift implementation of Santee Cooper’s Emergency Action Plan for Power System Disasters.

“The conference room can accommodate up to 15 storm team members,” James says. “It is equipped with video conferencing, the latest technology for tracking and monitoring storms and coordinating response efforts. This is where the team meets to

plan logistical details and how we will assign crews for restoration.”

The Santee Cooper Storm Center is an example of planning for the worst and hoping for the best, and it’s reassuring to know that it stands ready when severe weather strikes.

“Santee Cooper’s top priority is providing excellent customer service and reliability while working safely,” says Zack Dusenbury, vice president of retail operations. “The Storm Center, built to withstand a Category 5 hurricane and equipped with the latest technology, will help Santee cooper achieve that goal.” **PS**

Technician A Billy Simmons, part of Santee Cooper’s technical operations unit in Myrtle Beach, works to make sure equipment and systems are in top working order at the Storm Center.



The background of the image is a dramatic, high-contrast photograph of a stormy sky. Dark, heavy clouds are layered, with some lighter patches where light breaks through, creating a sense of depth and intensity. The overall color palette is dominated by grays, blacks, and whites, contributing to a somber and powerful atmosphere.

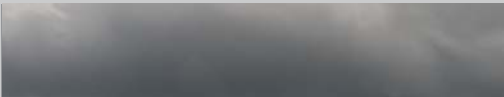
How Santee Cooper Prepares for Hurricanes and Major Storms

Santee Cooper begins preparing for an impending storm as soon as the utility enters Condition 4, with activities such as checking and fueling line trucks and other vehicles, ensuring communications equipment is in proper working order, and taking inventory and procuring supplies as needed, such as utility poles, electric transformers and associated equipment. Santee Cooper's storm plan includes:

- Mobilizing employees to handle increased customer calls so storm damage can be quickly evaluated
- Coordinating line crews and equipment
- Attending to any necessary equipment repairs
- Arranging meals and lodging for out-of-town workers.

While this approach is part of the utility's comprehensive storm plan, Santee Cooper also encourages customers to review their own safety plans when threatened by severe weather.

"It's always important to review your family's storm plan activities," says Zack Dusenbury, Santee Cooper's vice president of retail operations. "Making sure your plan is in place and that the entire family knows what to do in a bad weather situation is critical to ensuring the safety of your family and your property."



Santee Cooper closely monitors the projected path of storms, such as hurricanes and tropical storms. Santee Cooper has four conditions of readiness. They are:

Condition 4

Potential disaster-causing conditions are approximately 72 hours away and adverse effects to Santee Cooper's service territory appear likely.

Condition 3

Potential disaster-causing conditions are approaching Santee Cooper's service area and are approximately 48 hours away.

Condition 2

Potential disaster-causing conditions are expected to strike Santee Cooper's service area within 24 hours.

Condition 1

Potential disaster-causing conditions are an imminent threat to Santee Cooper's service area.

Santee Cooper offers the following storm safety tips:

When a storm threatens

- Check supplies and make sure you have the following items: portable radio with fresh batteries, flashlight, candles or lamps, matches, first aid kit, canned or packaged food that can be prepared without cooking or refrigeration, several days' supply of drinking water (one quart per person, per day), a full tank of gasoline in your car, and cash.
- Pay attention to local TV and radio broadcasts for storm position, intensity and expected path.
- Prepare for high winds by boarding up or taping windows and other glass, anchoring objects outside and bracing the garage door.
- Secure boats and trailers located near homes and check mooring lines of boats in the water.
- Put important papers in watertight containers (take them if you evacuate) and move valuables to upper stories of your home.
- Fill your bathtub with water for sanitary purposes.
- If you know someone who relies on electric-powered life-support equipment, be prepared to move that person to a facility outside of the storm's projected path to avoid the risk of an extended power outage.
- If you have elderly family members or neighbors, check on them to ensure they can get to a safe haven for the storm's arrival.

When a storm hits

- Stay indoors and away from doors and windows, electrical outlets and water pipes. Don't go out in the brief calm during the eye of the storm.
- Keep the TV and radio tuned for information from official sources. Be prepared to evacuate at a moment's notice.
- If you evacuate, shut off water and electricity. Electricity can be shut off at the breaker box. Take blankets, first aid supplies, medications, a battery-operated flashlight and other essential items to the nearest shelter.

After a storm has passed

- Never go near downed power lines. Always assume they are energized and extremely dangerous. If someone suffers an electric shock from coming in contact with a power line, call 911 immediately.
- Check for electrical damage inside your home, such as frayed wires, sparks or the smell of burning insulation. If you find damage, don't turn your power on until an electrician inspects your system and makes necessary repairs.
- Walk or drive cautiously. Watch out for debris-filled streets and weakened bridges. Snakes and insects can be a problem.
- Use your emergency water supply or boil water before drinking it until local officials deem the water supply safe. Report broken sewer or water mains.

If the power goes out

- Call Santee Cooper toll free at 888-769-7688 to report power outages. Our automated system is capable of handling thousands of calls per hour. Entering your phone number or your Santee Cooper account number in the system ensures that we know about your outage and will capture that information in our restoration plans.
- Keep refrigerator and freezer doors closed. Food usually stays frozen about 48 hours. A refrigerator can keep food cold for about four hours. Remember, when in doubt, throw it out.
- Do not connect a generator directly to your home's electrical system. It is dangerous to you, your neighbors and utility workers. Follow manufacturer's directions regarding connecting appliances directly to your generator.
- In any power outage, utility crews restore service as quickly as possible, starting with the largest lines and facilities serving the most people.
- If you have access to a battery-powered computer, visit www.santeecooper.com for updates on power restoration and other important information. We are improving Web access for mobile device users as well. **PS**



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Record cold weather challenges

The winter of 2010 brought a new peak record demand and the coldest weather Santee Cooper customers have seen in 40 years.

Santee Cooper met a new record demand of 5,668 megawatts on the morning of Jan. 11, 2010, topping a previous record of 5,650 megawatts set two years earlier. The peak record came amid a prolonged cold streak not seen in this part of the country in decades, which mean that customers consumed 75 percent more electricity in January than they had in the month before.

Santee Cooper worked with customers who struggled to pay higher bills related to the increased electricity they used to stay comfortable in the cold. Santee Cooper also continued to promote energy efficiency as a long-term vehicle to cut energy costs, through its Reduce The Use South Carolina programs. Information is available at www.ReduceTheUse.com.

Mini-Bond program revamped

The Santee Cooper Board of Directors approved two 2010 sales of Mini-Bonds and a longer sale period for each during its January board meeting, changes made in accordance with requests made by current bondholders.

The 2010 Mini-Bond sale proceeds will be used to help improve and maintain Santee Cooper's transmission system, and they allow much of the interest income to remain in the state because Mini-Bonds are sold to Santee Cooper customers and other South Carolina residents.

"The Mini-Bond Program is an easy way for all South Carolinians to invest in their state-owned utility, at increments as low as \$200," said Lonnie Carter, president and CEO.

Santee Cooper Mini-Bonds are municipal bonds and the interest income is exempt from federal and South Carolina state tax under current law. The utility offers two types of mini-bonds, and the maximum per-individual purchase is \$50,000:

- Current interest bearing bonds, which pay interest semi-annually and are sold in \$500 denominations
- Capital appreciation bonds, which pay interest at maturity and are sold in \$200 denominations

Mini-bonds will be sold throughout April and October. For more information, visit www.sccminibonds.com.

Customers satisfied

Santee Cooper customers have again given the utility top marks in customer satisfaction, highlighted by an overall 99.3 percent satisfaction rate among residential customers.

"Residential customers continue to be pleased with Santee Cooper, and Santee Cooper consistently outperforms utilities in South Carolina and across the nation," said Frank Brown, president of MarketSearch, the organization that conducted the survey.

Santee Cooper received exemplary marks in: reliability of service and quality of power, minimizing and restoring outages, efficient operation and reputation.



Some 89 percent of customers are satisfied that Santee Cooper is keeping rates as low as possible. In regards to the increasingly important issue of energy conservation and environmental consideration, the utility remains a strong steward in the minds of its consumers: 98 percent of customers are satisfied with Santee Cooper's concern for the environment, and 96 percent commended Santee Cooper's efforts to help them conserve energy.

Solar generation growing

In what was the largest solar installation in the Lowcountry to date, Santee Cooper, Palmetto Electric Cooperative and the Technical College of the Lowcountry dedicated a 20-kilowatt array at TCL's New River Campus in February. The project was funded completely through revenues generated by sales of Santee Cooper Green Power.

The 10 solar canopies, each generating about 2 kW's, will generate electricity tied into Palmetto Electric Cooperative's distribution system. The canopies are attractive and functional, in that they top bench structures that form convenient gathering points for students at TCL.

Through the substantial efforts of the cooperatives like Palmetto Electric Cooperative, and schools like the Technical College of the Lowcountry, Santee Cooper is advancing its resolve to stay on the leading edge of renewables while balancing the need for low-cost and reliable electricity. **PS**



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